UDC 621·951·47

IS : 5704-1988

(Reaffirmed 2002)

(Reaffirmed 2013)

Indian Standard

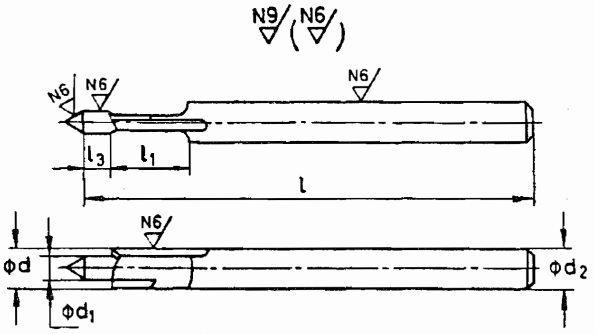
SPECIFICATION FOR COUNTERBORES WITH PARALLEL SHANKS AND SOLID PILOTS

(First Revision)

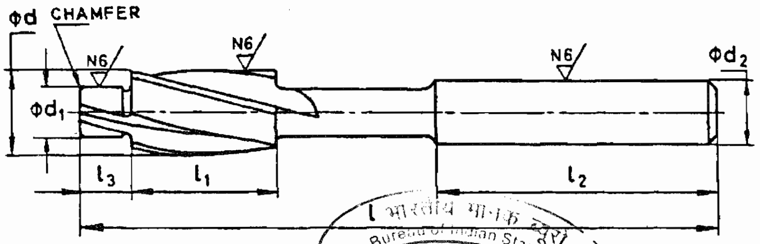
Small Tools Sectional Committee, EDC 45; Twist Drills, Reamers, Countersink Subcommittee, EDC 45 : 1 [Ref : Doc : EDC 45 (3149)]

1. Scope — Covers the dimensions and other requirements of counterbores with parallel shanks and solid pilots suitable for counterbores according to IS : 3406 (Part 2)-1986 'Dimensions for countersinks and counterbores: Part 2 Counterbores (*second revision*)'.

2. Dimensions



WITH TWO FLUTES FOR COUNTERBORE DIAMETER d UP TO 5 mm



WITH THREE OR MORE FLUTES FOR COUNTERBORE DIAMETER *d* OVER 5 mm.

Intranet Print

All dimensions in millimetres.

Cutting Diameter d z9		Pilot Diameter d_1 e8	Dia d_2 h9	l	l_1	l_2 ≈	l_3
Over	Up to and Including						
2*	3·15	To be specified to suit pilot hole diameter when ordering (minimum possible diameter is $d_1 = 1/3d$).	d	45	7	—	≈ d_1
3·15	5		d	56	10	—	
5	8		5	71	14	31·5	
8	12·5		8	80	18	35·5	
12·5	20		12·5	100	22	40	

*Includes 2 mm also.

Note — The figures are indicative of dimensions only and do not specify design features.

Adopted 15 January 1988	© April 1990, BIS	Gr 2

BUREAU OF INDIAN STANDARDS
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3. Tolerances — Tolerances on cutting length (l_1) and overall length (l) shall be as given below

All dimensions in millimetres.

Length		*Tolerance*
Over	Up to and Including	
—	30	± 0·5
30	120	± 0·8

4. Material — Shall be as given in IS : 5099-1983 'Technical supply conditions for twist drills (*first revision*)'.

5. Hardness — Shall be as given in IS : 5099-1983.

6. Designation — A counterbore of Type H, fine series (f) having diameter $d = 11.0$ mm and pilot diameter $d_1 = 6.6$ mm conforming to this standard and made of high speed steel shall be designated as:

Counterbore Hf 11·0 × 6·6 IS : 5704

7. General Requirements

7.1 The counterbores shall be right hand cutting, unless otherwise specified.

7.2 The counterbores with diameter up to 5 mm shall have external, centres according to IS : 2473-1975 'Dimensions for centre holes (*first revision*)' and shall also have straight flutes.

7.3 When the flutes of counterbores run into pilot, their edges need not be removed within the length of the pilot.

7.4 Tool type N shall be supplied according to IS : 5099-1983, unless otherwise specified.

8. Marking — Counterbores shall be marked with designation, manufacturer's name or trade-mark, and month and year of manufacture.

8.1 *Standard Marking* — Details available with the Bureau of Indian Standards.

9. Protective Coating and Packing

9.1 Each counterbore shall be covered with a suitable rust-proofing material and then wrapped in non-absorbent paper.

9.2 Each counterbore shall be protected by a cover bearing the designation, size, and manufacturer's name and trade-mark.

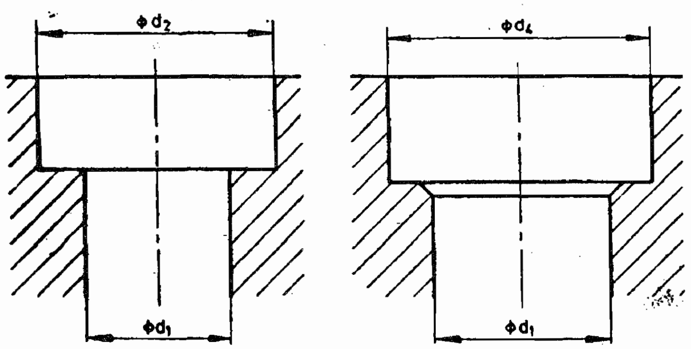
10. Sampling — The sampling and criteria of acceptance shall be in accordance with IS : 7778-1975 'Methods for sampling small tools

11 Selection — Selection of counterbore for counterbores Type H and K are given in Table 1

TABLE 1 SELECTION OF COUNTERBORE DIAMETER

(*Clause* 11)

All dimensions in millimetres.



Counterbore Nominal Size ($d \times d_1$)	Application Counterbores in Accordance with IS : 3406 (Part 2)-1986		
	Designation	Dia d_4	Dia d_2
2·2 × 1·2	H m 1	2·2	—
2·2 × 1·1	H f 1	2·2	—
2·5 × 1·4	H m 1·2	2·5	—
2·5 × 1·3	H f 1·2	2·5	—
2·8 × 1·6	H m (1·4)	2·8	—
2·8 × 1·5	H f (1·4)	2·8	—
3·3 × 1·8	H m 1·6	3·3	—
3·3 × 1·7	H f 1·6	3·3	—
3·8 × 2·1	H m (1·8)	3·8	—
3·8 × 2·0	H f (1·8)	3·8	—
4·3 × 2·4	H m 2·0	4·3	—
4·3 × 2·2	H f 2·0	4·3	—
5·5 × 2·4	H I K I m 2·0	—	5·5
5·5 × 2·2	H I K I f 2·0	—	5·5
6·0 × 2·4	H2 K2 m 2·0	—	6·0
6·0 × 2·2	H2 K2 f 2·0	—	6·0
5·0 × 2·9	H m 2·5	5·0	—
5·0 × 2·7	H f 2·5	5·0	—
6·5 × 2·9	H1 K1 m 2·5	—	6·5
6·5 × 2·7	H1 K1 f 2·5	—	6·5
8·0 × 2·9	H2 K2 m 2·5	—	8·0
8·0 × 2·7	H2 K2 f 2·5	—	8·0
6·0 × 3·4	H m 3·0	6·0	—
6·0 × 3·2	H f 3·0	6·0	—
7·0 × 3·4	H1 K1 m 3·0	—	7·0
7·0 × 3·2	H1 K1 f 3·0	—	7·0
9·0 × 3·4	H2 K2 m 3·0	—	9·0
9·0 × 3·2	H2 K2 f 3·0	—	9·0
6·0 × 3·4	H3 K3 m 3·0	—	6·0
6·0 × 3·2	H3 K3 f 3·0	—	6·0
6·5 × 3·9	H m (3·5)	6·5	—
6·5 × 3·7	H f (3·5)	6·5	—
8·0 × 3·9	H1 K1 m (3·5)	—	8·0
8·0 × 3·7	H1 K1 f (3·5)	—	8·0
9·0 × 3·9	H2 K2 m (3·5)	—	9·0
9·0 × 3·7	H2 K2 f (3·5)	—	9·0
6·5 × 3·9	H3 K3 m (3·5)	—	6·5
6·5 × 3·7	H3 K3 f (3·5)	—	6·5
8·0 × 4·5	H m 4·0	8·0	—
8·0 × 4·3	H f 4·0	8·0	—
9·0 × 4·5	H1 K1 m 4·0	—	9·0
9·0 × 4·3	H1 K1 f 4·0	—	9·0
10·0 × 4·5	H2 K2 m 4·0	—	10·0
10·0 × 4·3	H2 K2 f 4·0	—	10·0
8·0 × 4·5	H3 K3 m 4·0	—	8·0
8·0 × 4·3	H3 K3 f 4·0	—	8·0

(*Continued*)

TABLE 1 SELECTION OF COUNTERBORE DIAMETER — *Contd*

Counterbore Nominal Size ($d \times d_1$)	Application Counterbores in Accordance with IS : 3406 (Part 2)-1986		
	Designation	Dia d_4	Dia d_2
10·0 × 5·5	H m 5·0	10·0	—
10·0 × 5·3	H f 5·0	10·0	—
11·0 × 5·5	H1 K1 m 5·0	—	11·0
11·0 × 5·3	H1 K1 f 5·0	—	11·0
13·0 × 5·5	H2 K2 m 5·0	—	13·0
13·0 × 5·3	H2 K2 f 5·0	—	13·0
10·0 × 5·5	H3 K3 m 5·0	—	10·0
10·0 × 5·3	H3 K3 f 5·0	—	10·0
11·0 × 6·6	H m 6·0	11·0	—
11·0 × 6·4	H f 6·0	11·0	—
13·0 × 6·6	H1 K1 m 6·0	—	13·0
13·0 × 6·4	H1 K1 f 6·0	—	13·0
13·0 × 6·6	H2 K2 m 6·0	—	13·0
13·0 × 6·4	H2 K2 f 6·0	—	13·0
11·0 × 6·6	H3 K3 m 6·0	—	11·0
11·0 × 6·4	H3 K3 f 6·0	—	11·0
15·0 × 9·0	H m 8·0	15·0	—
15·0 × 8·4	H f 8·0	15·0	—
18·0 × 9·0	H1 K1 m 8·0	—	18·0
18·0 × 8·4	H1 K1 f 8·0	—	18·0
20·0 × 9·0	H2 K2 m 8·0	—	20·0
20·0 × 8·4	H2 K2 f 8·0	—	20·0
15·0 × 9·0	H3 K3 m 8·0	—	15·0
15·0 × 8·4	H3 K3 f 8·0	—	15·0
18·0 × 11·0	H m 10·0	18·0	—
18·0 × 10·5	H f 10·0	18·0	—
20·0 × 11·0	H1 K1 m 10·0	—	20·0
20·0 × 10·5	H1 K1 f 10·0	—	20·0
24·0 × 11·0	H2 K2 m 10·0	—	24·0
24·0 × 10·5	H2 K2 f 10·0	—	24·0
18·0 × 11·0	H3 K3 m 10·0	—	18·0
18·0 × 10·5	H3 K3 f 10·0	—	18·0
20·0 × 13·5	H m 12·0	20	—
20·0 × 13·0	H f 12·0	20	—
24·0 × 13·5	H1 K1 m 12·0	—	24·0
24·0 × 13·0	H1 K1 f 12·0	—	24·0
26·0 × 13·5	H2 K2 m 12·0	—	26·0
26·0 × 13·0	H2 K2 f 12·0	—	26·0
20·0 × 13·5	H3 K3 m 12·0	—	20·0
20·0 × 13·0	H3 K3 f 12·0	—	20·0

Note 1 — Sizes shown within brackets are of second preference.

Note 2 — Clearance hole dia d_1 shall be according to medium and fine series in accordance with IS : 1821-1982 'Dimensions for clearance holes for bolts and screws'.

EXPLANATORY NOTE

This standard was first published in 1970. In this revision :

a) Counterbores dimensions given in table are aligned with IS : 3406 (Part 2)-1986,

b) Reference to IS : 5099-1983 has been included for material and hardness,

c) Designation clause has been modified incorporating the type of counterbore and the thread pitch series,

d) Sampling clause has been included, and

e) Surface finish has been included.

In the preparation of this standard, considerable assistance has been derived from :

a) ISO 4206-1977 'Counterbores with parallel shanks and solid pilots', issued by the International Organization for Standardization (ISO), and

b) DIN 373-1975 'Parallel shank counterbores with solid pilot', issued by the Deutsches Institut für Normung (DIN).

PRINTED AT KAPOOR ART PRESS, NEW DELHI-110 064.